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The Formative Evaluation

On March 27th and 28th, Exhibit A Design Group tested five prototype components. Sample groups representing the target audience were drawn from two elementary school classes, one from Cherokee Elementary School in N.C. and another from Pi Beta Phi Elementary School in Gatlinburg, TN.

Evaluation Goals

Through this Formative Evaluation process, Exhibit A Design Group identified whether the target audience:

- Understood the main concept of each component. -
- Misinterpreted the content in any way. -Understood
- how to use the interactive elements. -Found the
- components appealing.
- Found the reading level appropriate. -
- Would change the components in any way.

The Field Testing Process

The field testing group consisted of the following people:

Brenda Cowan - Museum Education Specialist, Exhibit A Design Group
Sara DeAngelis - Interpretive Exhibition Specialist, Exhibit A Design Group
Sue Sacks, Heather Stehle and Karen Ballentine - The GSM National Park Site

In a controlled room, the five prototypes were situated as they will appear in the final exhibition environment. One at a time, students were brought into the controlled room, briefly introduced to what the field testing process, and were told what was expected of them. Students then reviewed each of the five prototypes one at a time, and answered a series of questions from the evaluators.

Students began with the "Looking for Clues" prototype, then proceeded to the "Amazing Oasis" prototype, "Who's in the News" prototype, "Salamander Key" prototype, and concluded with the "Abundance of Tiny Animals" prototype. Students were encouraged to interact with

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the prototypes while the data collectors observed, and were then asked a series of directed questions pertaining to each prototype. The following Evaluation Data Sheets were designed to collect data pertaining to content comprehension and design effectiveness.

Separated into two distinct forms, the Evaluation Data Sheets were completed concurrently during the prototype testing by two data collectors. Teachers were encouraged to communicate any additional reactions that students may have to the prototypes following the formal evaluation sessions to Karen Ballentine at The Great Smoky Mountains National Park Site.

Content Comprehension Data Sheet

Looking for Clues

-Ask students: What is this component trying to tell people about? *(People can find different types of evidence of animal activity throughout the Park)*

-Have students read a few lines of the text aloud. *(is the word use and vocabulary level appropriate?)*

Amazing Oasis

-Ask students: What this component is trying to tell people about? *(The Park has a variety of habitats that indicate the great abundance of species of animals and plants living there.)*

-Ask students to read a few lines of text aloud. *(Is the word use and vocabulary appropriate?)*

Who's in the News?

-Ask students: What is this component trying to tell people? *(Scientists keep track of the various species found in the park, and have even found some very surprising species.)*

-Ask students to read a few lines of text aloud. *(Is the word use and vocabulary appropriate?)*

Salamander Key

-Ask students: What is this component trying to tell people? *(There are different types of salamander, all of which have special places in the Park where they live.)*

-Ask students to read a few lines of text aloud. *(Is the word use and vocabulary appropriate?)*

Tons of Tiny Animals

-Ask students: What is this component trying to tell people? *(There is an amazing quantity of animals in the Park, most of which are tiny.)*

-Ask students what the images represent. *(The quantity of animals.)*

-Ask students to read a few lines of text aloud. *(Is the word use and vocabulary appropriate?)*

Follow Up

-Ask students: Would you change any of these components if you could? If so, which ones would you change? What would you make different?

Additional Comments

Design Effectiveness Data Sheet

Looking for Clues

- Do students know how to use the interactive element on this prototype? (*Is the handle easy or difficult to turn or figure out how to move?*)
- Ask students if this is fun or interesting to look at. (*Are the **graphics compelling or not interesting at all.***)

Amazing Oasis

- Ask students to demonstrate how to use this interactive. (*Do they do it correctly?Are they having an easy time figuring out what to do, or a difficult time?*)
- Ask students if this is fun or interesting to look at. (*Are the graphics compelling or not interesting at all.*)

Who's in the News?

- Ask students if this is fun or interesting to look at. (*Are the graphics compelling or not interesting at all.*)

Salamander Key

- Ask students if this is fun or interesting to look at. (*Are the graphics compelling or not interesting at all.*)

Tons of Tiny Animals

- Ask students to demonstrate how to use this interactive. (*Do they do it correctly?Are they having an easy time figuring out what to do, or a difficult time?*)
- Ask students if this is fun or interesting to look at. (*Are the graphics compelling or not interesting at all.*)

Evaluation Analysis

The prototype models were tested with 12 children: 7 boys and 5 girls, between the ages of 9 and 13. (It should be noted that one boy did not want to touch any of the interactives and could not read very well. He was unable to understand any of the components on any significant level.) The sample group's combined responses are as follows:

Looking for Clues

Content Responses

- 10 out of 12 children got the main message of the component with ease. "When you go hawking, look for tracks, for signs."
"When you go out into nature, look for tracks to tell you what animals are there:"

-All of the children could read the text with ease. When asked to define "residents" several of the children had trouble but could figure it out with help.

Design Responses

- 9 out of the 12 children used the dial interactive with ease and understood what the corresponding pictures represented.
- 3 children had trouble understanding the connection between the pictures of the animals and the evidence pictures. They couldn't understand to look at the evidence circles and relate them to the picture that the dial was pointing at.

Amazing Oasis

Content Responses

- 11 out of 12 children understood the main message of the interactive, and were clear as to the relationship of the sliding transparencies to the content.
"How much each type of tree covers the park."

"Trying to show the different habitats that different trees form."

-Every child read the text well but none of them could define the word "abundance."

Design Responses

- 11 out of 12 children used the interactive sliding map with ease.

"On most things you can't touch or do anything on the poster. Here you can slide out the maps."

Who's in the News?

Content Responses

- 10 out of 12 children understood the content of this component with ease.
- There was no trouble with the vocabulary comprehension or word usage in this component.

Design Responses

- Children enjoyed the talk bubbles and were able to understand what they communicated. The chart was less visually appealing and a little hard to understand for 2 of the children. "It could use more color variety."
- "Make it more colorful and catchy - make it interactive:"

Salamander Key

Content Responses

- The majority of children understood the content by reading the text but were not able to catch the full message of the component via the interactive. The main question "What type of salamander is this?" was not being read by the children and it was not clear how to use the key to find the answer. "There are too many bubbles to have to read."
- The vocabulary and word usage was fine.

Design Responses

- The majority of children couldn't understand how to use this interactive. Design modifications were made halfway through the testing that enabled children to better understand that they needed to answer a question regarding a specific picture (the salamander), and that they needed to use the key bubbles to answer it correctly.
- Children were not able to use the key correctly, and most often flipped up the answer bubbles and bypassed the string of questions that lead up to them. Many children said, "I liked the flip up circles."

Tons of Tiny Animals

Content Responses

-8 out of 12 children understood the main message of this interactive component. "Insects are the most because it had a bigger list and a longer space."

*The vocabulary and word usage was fine.

Design Responses

-All of the children had an easy time cranking the animal pictures up, and most of them understood the relationship of their height to their amounts.

-The photographs of the animals on this component were very appealing and many of the children mentioned how much they liked them.

Additional Comments

-3 children suggested changing "Who's in the News" by making it more colorful and "catchy." -3 children liked "Tons of Tiny Animals" the best because they are interactive, "because it looks like (the animals) are flying", and because "it shows that there are more little ones than big ones."

-1 child liked the "Salamander Key" because it is game-like. "You have to figure it out." - 1 child liked the Amazing Oasis the best because of the transparent maps.

Summation and Recommendations for Design Development

Adaptations to the physical design in a few of the components will include corresponding adaptations to that component's directional text. Also, a few components will be modified to include simpler content-related wording.

-The location of the graphics will be revised in "Looking for Clues", to clarify the relationship between the animals and their evidence. Adapted directional text would also be incorporated here, and simpler wording to replace "residents:"

- "Amazing Oasis" worked very successfully, and should only have the text revisited.

- "Who's in the News" will be revisited for a graphic re-styling, to match the appeal of the other components. The chart might also be visually simplified.

- "Salamander Key" will be simplified with clearer directional text and a repositioning of graphic elements. Its game-like quality will be maintained, while the question-based keying will be changed to a shorter statement-based approach. The number of species will also be reduced to clarify the key and make it less textually dense.